

Serial No. 10/725,326

CLAIM AMENDMENTS:

1-30. (Canceled)

31. (Currently Amended) A method of forming a trench DMOS transistor device comprising:

providing a substrate of a first conductivity type, said substrate acting as a common drain region for said device;

depositing an epitaxial layer of said first conductivity type over said substrate, said epitaxial layer having a lower majority carrier concentration than said substrate;

forming a body region of a second conductivity type within an upper portion of said epitaxial layer;

etching a trench extending into said epitaxial layer from an upper surface of said epitaxial layer;

forming an insulating layer lining at least a portion of said trench;

forming a low resistivity deep region of said first conductivity type below a portion of said trench, the deep region extending from an upper surface of the epitaxial layer into the substrate, said deep region acting to provide electrical contact with said substrate;

forming a conductive region within said trench adjacent said insulating layer; and forming a low resistivity deep region extending into said device from an upper surface of said epitaxial layer, said deep region acting to provide electrical contact with said substrate; and

forming a source region of said first conductivity type within an upper portion of said an upper portion of said body region and adjacent said trench, wherein said step of forming a source region also forms a region of first conductivity within the low resistivity deep region epitaxial layer over the deep region, wherein the source region within the upper portion of said epitaxial layer completely overlies the deep region.

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32. (Previously Presented) The method of claim 31, wherein the region of first conductivity formed within the low resistivity deep region is formed by implantation and diffusion.